

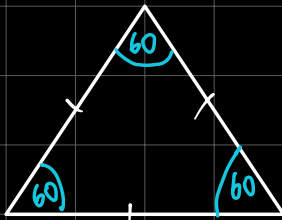
6th, 7th, 8th, 9th, 10th
Single Q.

3

TRIGONOMETRY (20-25 Marks)

→ Mensuration

TRIANGLES

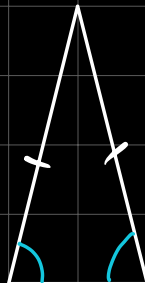


EQUILATERAL

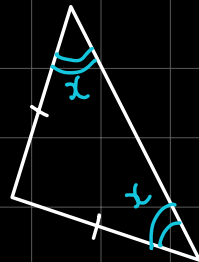
All sides are equal

IMP

All angles are 60



ISOSCELES



IF ANY ONE ANGLE OF AN
ISOSCELES TRIANGLE IS 60,
IT AUTOMATICALLY BECOMES
AN EQUILATERAL TRIANGLE.

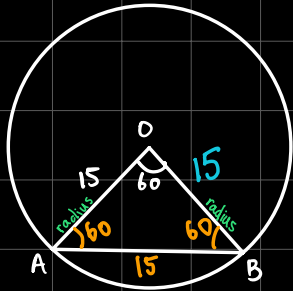


RIGHT ANGLED

'a' and 'b'
are called the
legs of right
angle.

Q: Circle with centre O, radius 15, Angle AOB = 60 is given
State value of length AB. (1 mark)

$$AB = 15$$



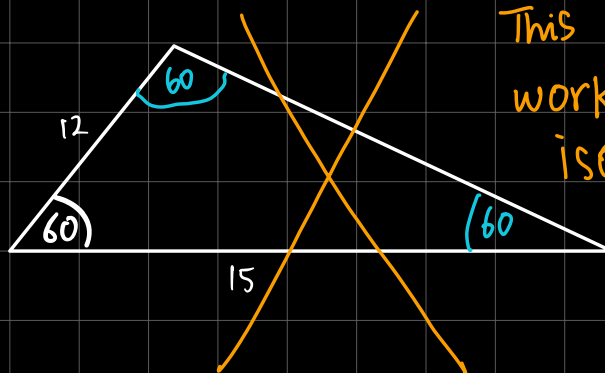
Thought process:

$$OA = OB = 15 \text{ (radius of circle)}$$

$\triangle OAB$ is isosceles

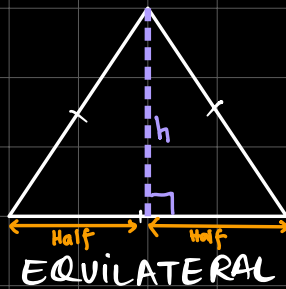
IF ANY ONE ANGLE OF AN
ISOSCELES TRIANGLE IS 60,
IT AUTOMATICALLY BECOMES
AN EQUILATERAL TRIANGLE.

Now $\triangle OAB$ is equilateral

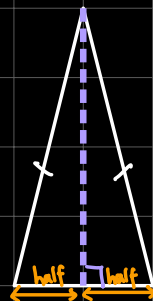


This idea only
work for
isosceles.

If I draw a height in a triangle, will it cut the base in two equal halves?

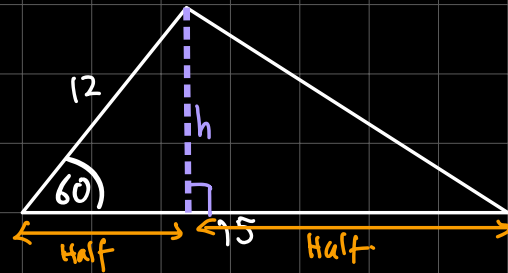


EQUILATERAL



ISOSCELES

In case of equilateral and isosceles triangles, it cuts in two equal halves.



SCALENE

All sides are different

All angles are different.

TRIGONOMETRIC RATIOS

sine



sin

cosine



cos

tangent

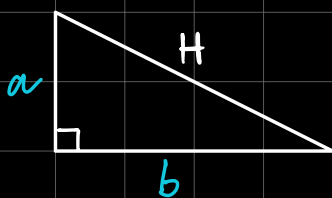


tan

RIGHT ANGLED TRIANGLE

PYTHAGORAS THEOREM

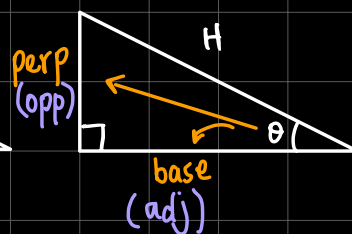
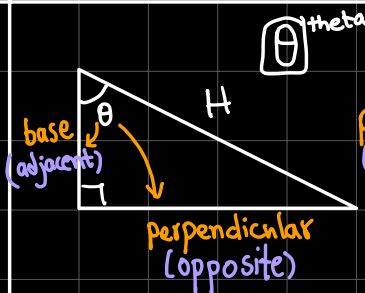
No other angles than 90° are involved $\leftarrow$ given to be found.



$$H^2 = a^2 + b^2$$

TRIGONOMETRIC RATIOS

One angle other than 90° is involved $\leftarrow$ given to be found.



$$\sin \theta = \frac{P}{H}$$

$$\sin \theta = \frac{O}{H}$$

$$\cos \theta = \frac{B}{H}$$

$$\cos \theta = \frac{A}{H}$$

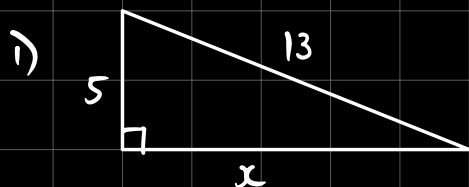
$$\tan \theta = \frac{P}{B}$$

$$\tan \theta = \frac{O}{A}$$

Some ppl have
curly Brown Hair
Through proper brushing.

SOH
CAH
TOA

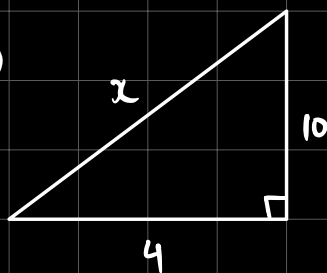
Q: Find value of x



$$\begin{aligned}H^2 &= a^2 + b^2 \\13^2 &= 5^2 + x^2 \\169 &= 25 + x^2 \\x^2 &= 144 \\x &= \sqrt{144} \\x &= 12\end{aligned}$$

When we take
square root to
remove square
we use $\pm$ on the
right side.
Except: Trigonometry
Mensuration.

2)



$$\begin{aligned}x^2 &= 10^2 + 4^2 \\x^2 &= 100 + 16 \\x^2 &= 116 \\x &= \sqrt{116} \\x &= 10.77\end{aligned}$$

(SF)

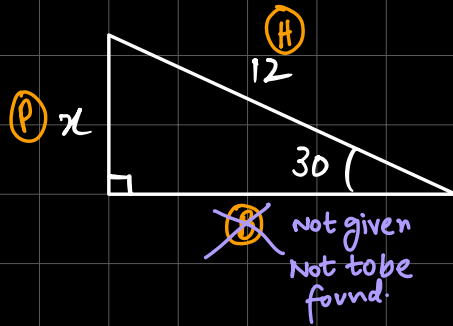
Question required
Bound to follow it.

Question silent

QP
↓
3sf

MS
Student should leave answer to a lot of dp / sig figs.
It is paper checker's job to convert your answer to 3sf and then tally with MS.

3)



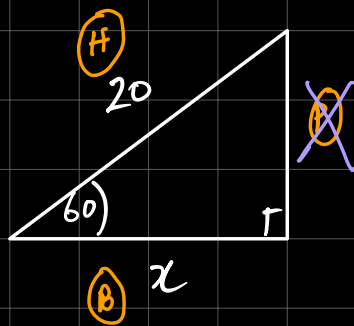
$$\sin \theta = \frac{P}{H}$$

$$\sin 30 = \frac{x}{12}$$

$$x = 12 \sin 30$$

$$x = 6$$

4)



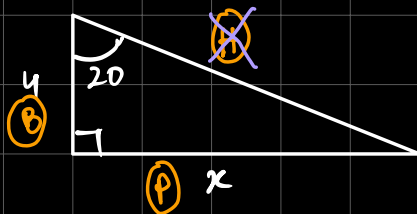
$$\cos \theta = \frac{B}{H}$$

$$\cos 60 = \frac{x}{20}$$

$$x = 20 \cos 60$$

$$x = 10$$

5)

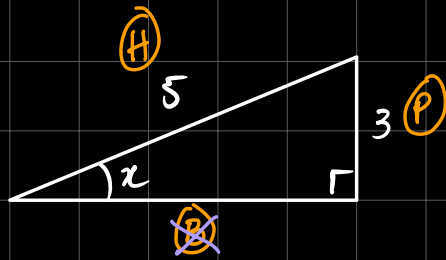


$$\tan 20 = \frac{P}{B}$$

$$x = 4 \tan 20$$

$$x = 1.45588$$

6)



$$\sin x = \frac{3}{5}$$

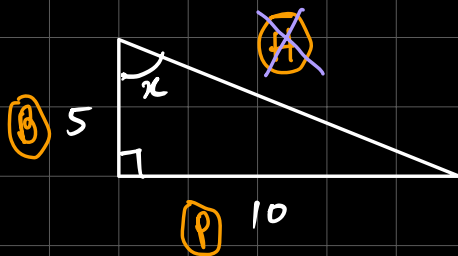
$$x = \sin^{-1}\left(\frac{3}{5}\right)$$

$$x = 36.8699$$

NOTE: $\sin^{-1}$ $\cos^{-1}$ $\tan^{-1}$

Inverse trig ratios are ALWAYS used when we have to find angle.

6)



$$\tan x = \frac{10}{5}$$

$$\tan x = 2$$

$$x = \tan^{-1}(2)$$

$$x = 63.4349$$

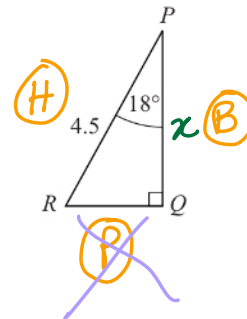
- 6 (a) In triangle PQR , $\hat{P}Q = 18^\circ$, $\hat{P}QR = 90^\circ$ and $PR = 4.5$ m.

Find PQ .

$$\cos 18 = \frac{x}{4.5}$$

$$x = 4.5 \cos 18$$

$$x = 4.27975$$



Answer 4.27975 m [2]

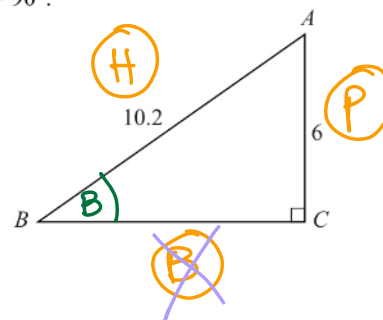
- (b) In triangle ABC , $AB = 10.2$ m, $AC = 6$ m and $\hat{A}CB = 90^\circ$.

(i) Find $\hat{A}BC$.

$$\sin B = \frac{6}{10.2}$$

$$B = \sin^{-1}\left(\frac{6}{10.2}\right)$$

$$B = 36.031879$$



Answer [2]

M1 = Method marks (only earned by showing full method)

A1 = Answer (can only be earned if you gained method mark)

B1 } Independent marks { no need to show a method } usually when you read values from graph/table

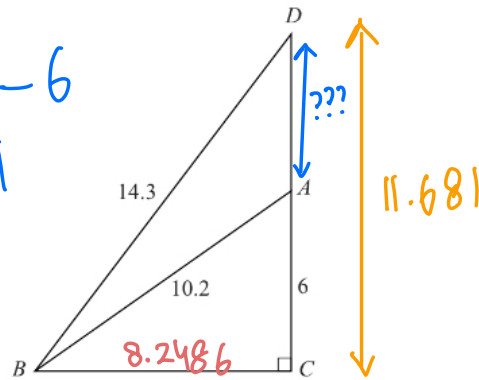
* Dependent
M = Method.
If you lose this mark
you cannot get further
marks.

HARDER TYPE OF QUESTION

(ii)

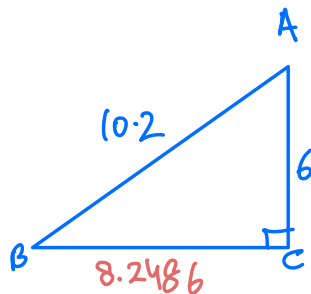
$$AD = 11.681 - 6$$

$$= 5.681$$



D is the point on CA produced such that $BD = 14.3$ m.

Find AD.



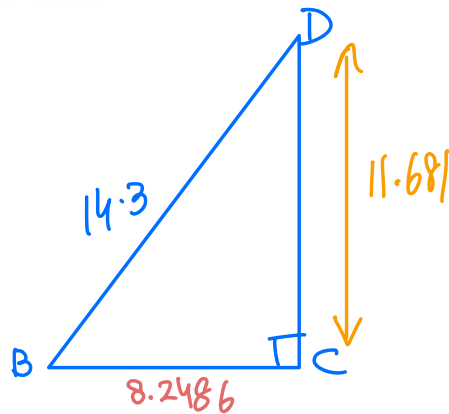
$$10.2^2 = 6^2 + CB^2$$

$$104.04 = 36 + CB^2$$

$$CB^2 = 68.04$$

$$CB = \sqrt{68.04}$$

$$CB = 8.2486$$



$$14.3^2 = (8.2486)^2 + CD^2$$

$$204.49 = 68.04 + CD^2$$

$$CD^2 = 136.45$$

$$CD = \sqrt{136.45}$$

$$CD = 11.681$$

Answer m [4]

$$ms = 5.68$$

$$5.68118 \rightarrow 5.68 \checkmark$$

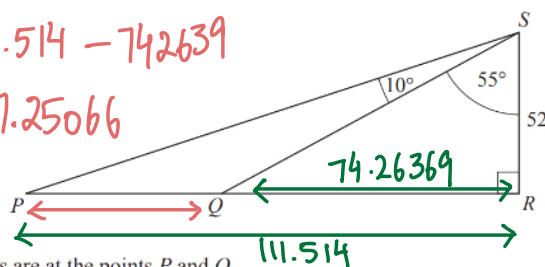
$$5.68075 \rightarrow 5.68 \checkmark$$

$$5.680325 \rightarrow 5.68 \checkmark$$

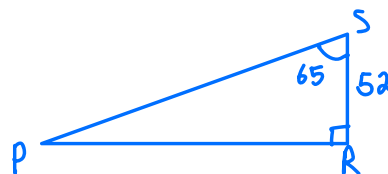
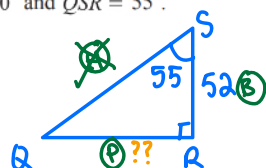
(b)

$$PQ = 111.514 - 74.2639$$

$$PQ = 37.25066$$



Two boats are at the points P and Q.
RS is a vertical cliff of height 52 m.
 $\angle PSQ = 10^\circ$ and $\angle QSR = 55^\circ$.



(ii) Calculate the distance, PQ, between the boats.

$$\tan 55 = \frac{QR}{52}$$

$$QR = 52 \tan 55$$

$$QR = 74.26369$$

$$\tan 65 = \frac{PR}{52}$$

$$PR = 52 \tan 65$$

$$PR = 111.514$$

Answerm [3]

4024/21/O/N/13

IF NOT RIGHT ANGLED TRIANGLE

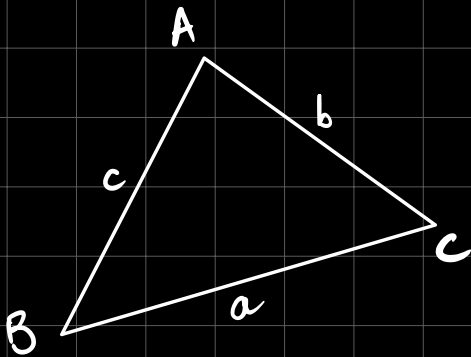
Sine Rule

Sine Rule only works
if one complete
"angle-side pair" is
given in question.

Cos Rule.

If no complete
pair is given in
question

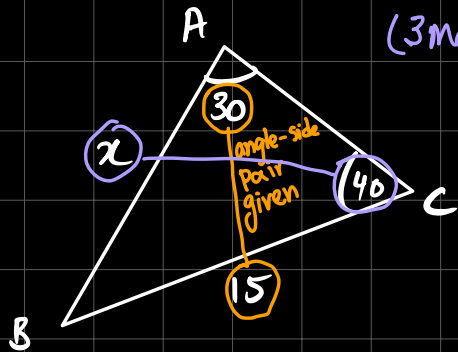
SINE RULE



$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

Sine Rule can only be
used if one
"angle-side pair" is
given in the question.

9.



(3 marks) Be careful. Show full workings.

$$\frac{\sin 30}{15} = \frac{\sin 40}{x}$$

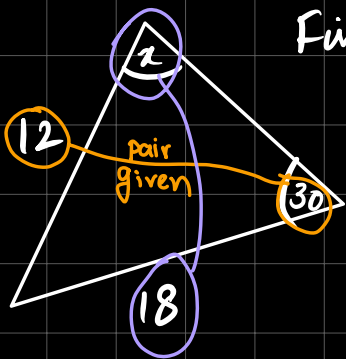
$$x \sin 30 = 15 \sin 40$$

$$x = \frac{15 \sin 40}{\sin 30}$$

$$x = 19.2836$$

$\left\{ \begin{matrix} \sin^{-1}(\quad) \\ \cos^{-1}(\quad) \\ \tan^{-1}(\quad) \end{matrix} \right\}$ is only used if we are trying to find angle.

Q.



Find x .

$$\frac{\sin 30}{12} = \frac{\sin x}{18}$$

$$12 \sin x = 18 \sin 30$$

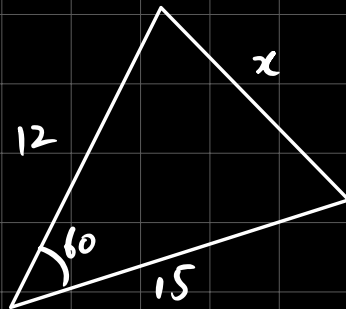
$$\sin x = \frac{18 \sin 30}{12}$$

$$\sin x = 0.75$$

$$x = \sin^{-1}(0.75)$$

$$x = 48.5904$$

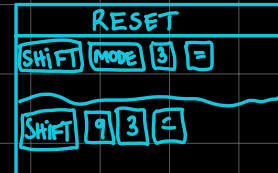
Q.



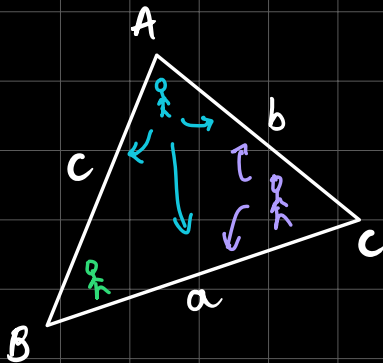
Not Right $\rightarrow$ Pythagoras X
Trig Ratios X

Complete Pair $\rightarrow$ X $\rightarrow$ Sine X Rule

Cos Rule $\checkmark$



Cos Rule : (ONLY ONE ANGLE IS INVOLVED)



ADD SQUARES
OF THE
NEIGHBOURING
SIDES

SUBTRACT
SQUARE OF
OPPOSITE
SIDE

$$\cos A = \frac{c^2 + b^2 - a^2}{2(c)(b)}$$

neighb. sides.

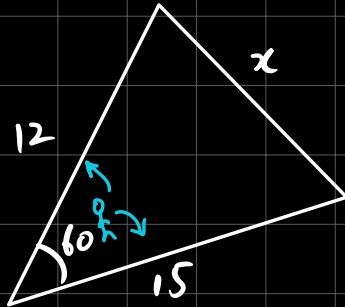
$$\cos B = \frac{a^2 + c^2 - b^2}{2ac}$$

$$\cos C = \frac{a^2 + b^2 - c^2}{2ab}$$

This is a 4 Mark part. Make sure you do all steps exactly like this.

use calculator on highlighted parts only.

Q.



$$\cos 60 = \frac{12^2 + 15^2 - x^2}{2(12)(15)}$$

$$\cos 60 = \frac{369 - x^2}{360}$$

$$360 \cos 60 = 369 - x^2$$

$$x^2 = 369 - 360 \cos 60$$

$$x^2 = 189$$

$$x = \sqrt{189}$$

$$x = 13.74773$$

2 Mark

M1 (method)

✓

✓

✗

A1 (Answer)

✓

✗

✓

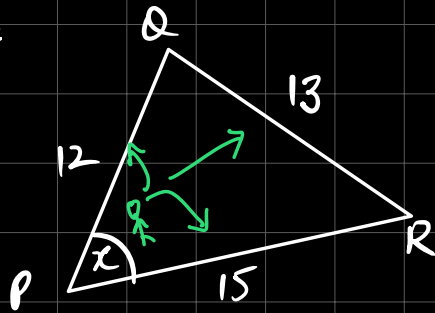
2

1

0

If a student has not earned M marks, you cannot earn A marks.

Q:



right angle x, sine rule x, cosRule ✓

$$\cos x = \frac{12^2 + 15^2 - 13^2}{2(12)(15)}$$

$$\cos x = \frac{200}{360}$$

$$x = \cos^{-1}\left(\frac{200}{360}\right)$$

$$x = 56.251011$$

TRIGONOMETRY QUESTION

RIGHT ANGLED

angles
not involved

Angles
involved

PYTHAGORAS

2 marks

TRIG RATIOS

2 marks

NOT RIGHT ANGLED TRIANGLE

One angle - side
pair is given

No pair
Given

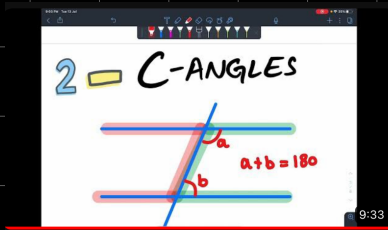
SINE RULE

3 Marks

cosRule

3/4
marks

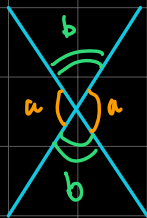
- Branches:
- 1) Area of a triangle
 - 2) Angle of elevation/depression.
 - 3) Bearings
 - 4) How to use Trig in 3D shapes?



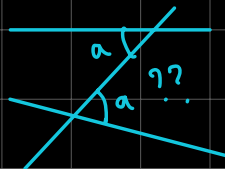
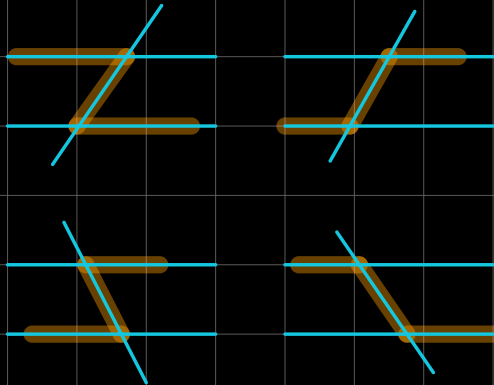
ANGLES | ANGLE PROPERTIES | O LEVELS MATHS | IGCSE MATHS

22K views · 2 years ago

ZAINEMATICS



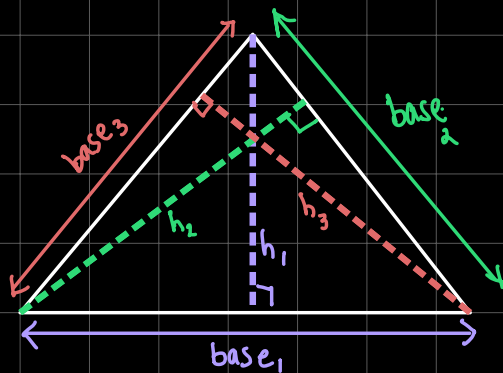
VERTICALLY
OPPOSITE
ANGLES.



This is
not a
Z-angle.

AREA OF A TRIANGLE

TRIG. (20)
MEASUREMENT (20)

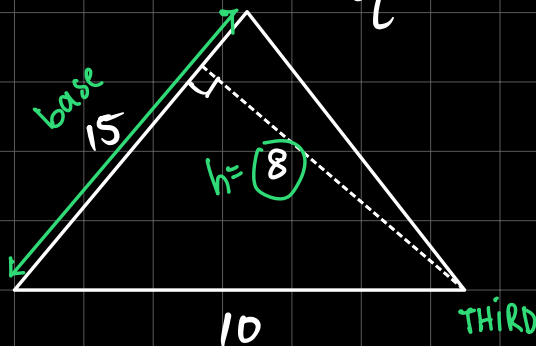


$$A = \frac{1}{2} \times b \times h$$

$h = 90^\circ$ distance from
Third point on the
base line.

Rule: Every Triangle has 3 bases.
Each base will have its own height.
In formula you have to use
correct pair of base and height.

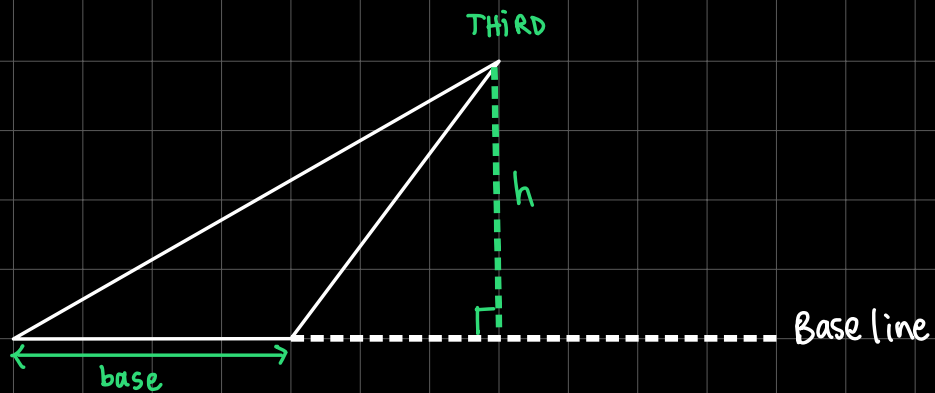
Q: Find area of this triangle:



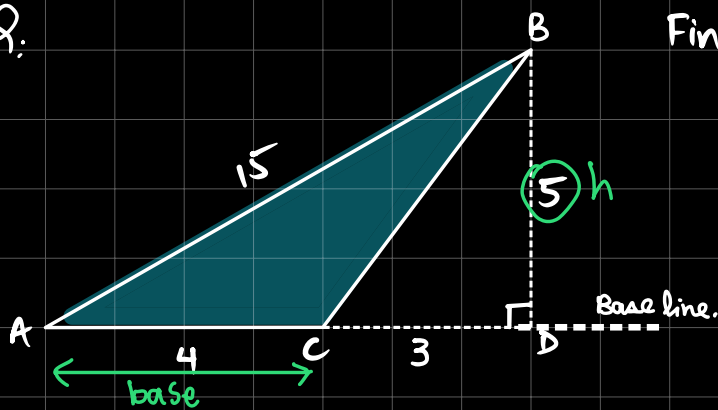
$$A = \frac{1}{2} \times b \times h$$

$$= \frac{1}{2} (15) \times (8)$$

$$A = 60$$



Q:

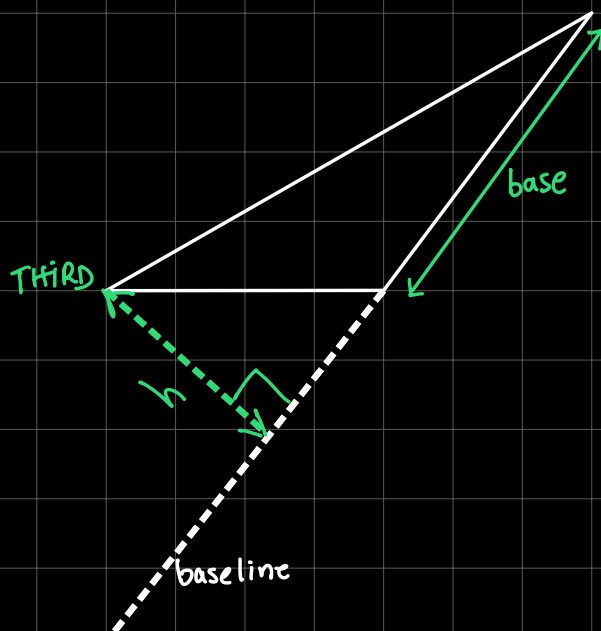
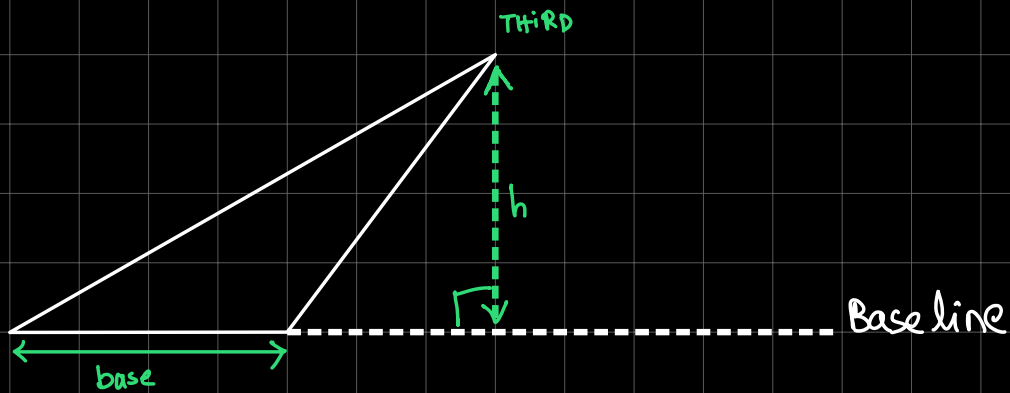
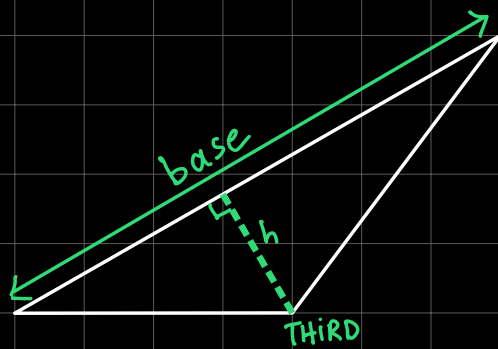


Find area of $\triangle ABC$

$$A = \frac{1}{2} \times b \times h$$

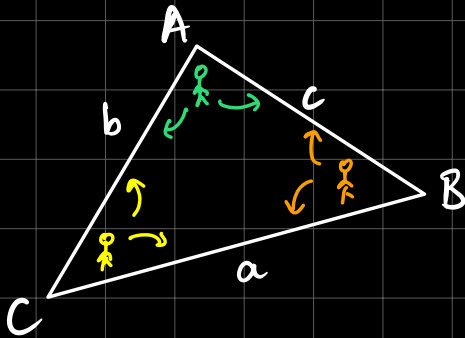
$$A = \frac{1}{2} \times (4) \times (5)$$

$$A = 10$$



IF NO CORRECT PAIR OF BASE & HEIGHT
IS AVAILABLE???

Now The Question will give an angle



$$A = \frac{1}{2} \boxed{} \boxed{} \sin(\text{angle})$$

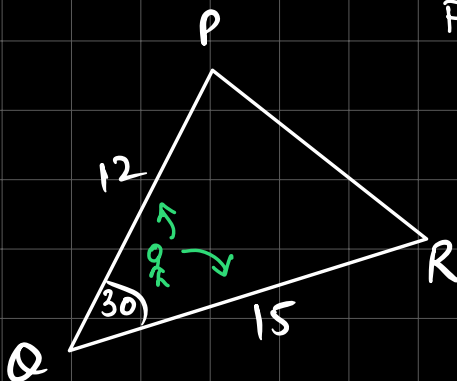
neighboring sides

$$A = \frac{1}{2} \boxed{b} \boxed{c} \sin(A)$$

$$A = \frac{1}{2} \boxed{a} \boxed{c} \sin(B)$$

$$A = \frac{1}{2} \boxed{a} \boxed{b} \sin(C)$$

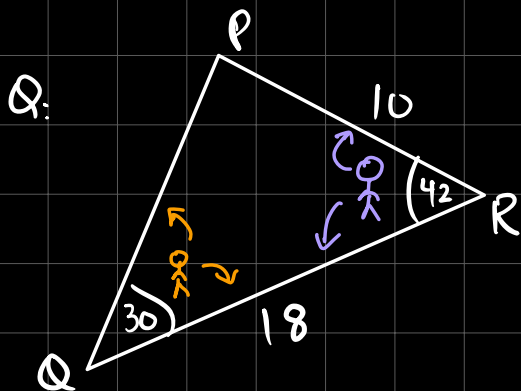
Q.



Find area of triangle PQR

$$A = \frac{1}{2} \boxed{12} \boxed{15} \sin(30)$$

$$A = 45$$



Find area of $\triangle PQR$

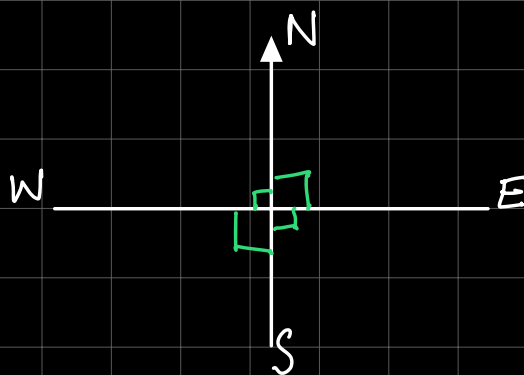
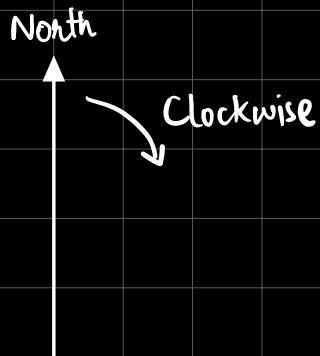
$$A = \frac{1}{2} \boxed{10} \boxed{18} \sin(42)$$

$$A = 60.22175$$

$$A = \frac{1}{2} \boxed{??} \boxed{18} \sin(30)$$

BEARINGS

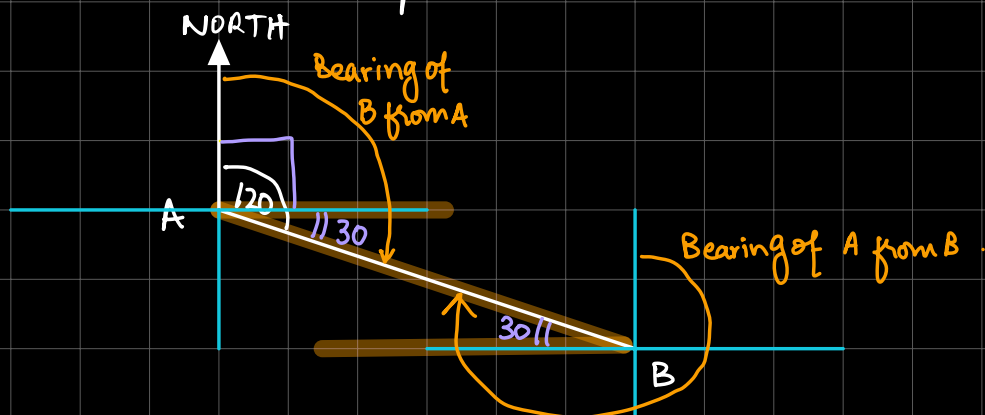
Used to tell direction. in navy and aviation



NEVER EAT SALTY WATERMELON

we will do one easy question to understand the process.

Q.

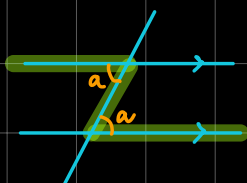


(a) Find bearing of B from A = $90 + 30 = 120$

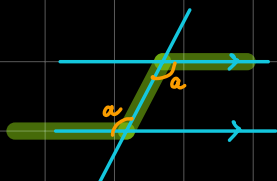
(b) Find bearing of A from B = $90 + 90 + 90 + 30 = 300$

PROCESS:

1- Make cross on alphabet after the word "from".

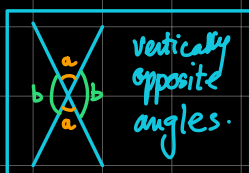


2- Split angles if possible

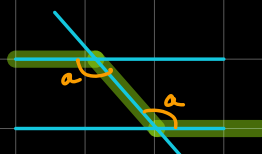
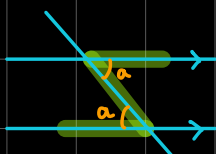


3- Mark all Z-angles

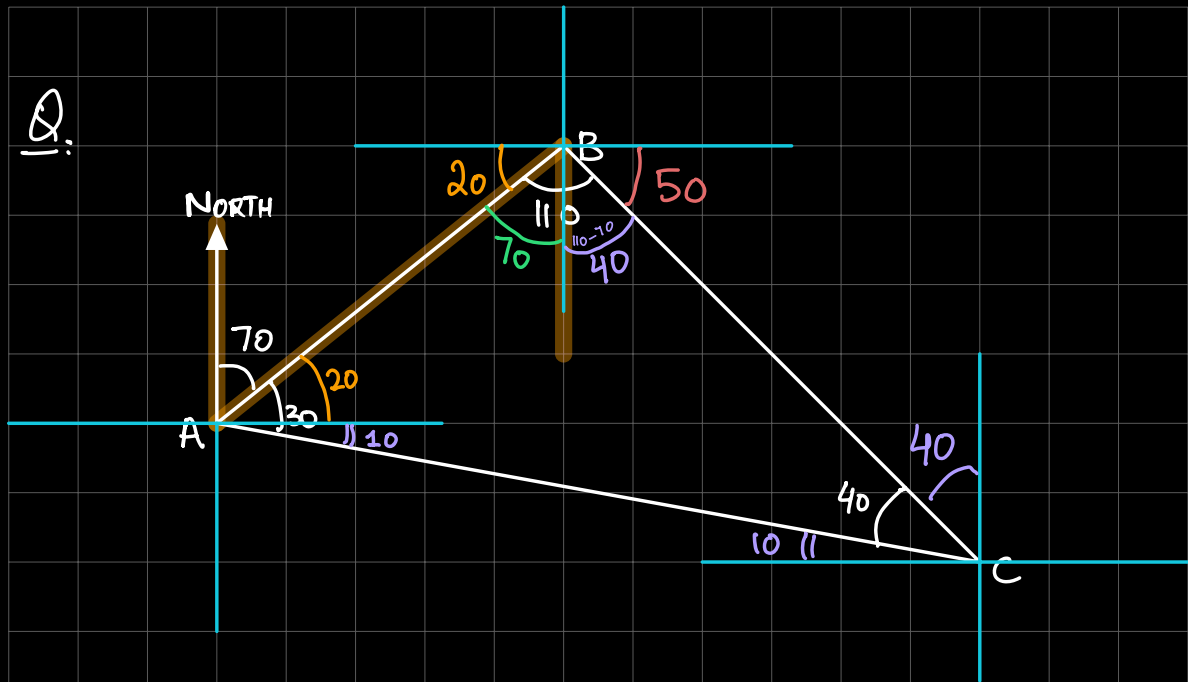
4- Find bearings.



vertically opposite angles.



Q:



Find Bearing of

(a) B from A = 070° *

(b) C from A = $30 + 70 = 100^\circ$

(c) C from B = $90 + 50 = 140^\circ$

(d) A from B = $90 + 90 + 70 = 250^\circ$

(e) A from C = $90 + 90 + 90 + 10 = 280^\circ$

(f) B from C = $90 + 90 + 90 + 10 + 40 = 320^\circ$
 $360 - 40 = 320$

* $12.34^\circ \rightarrow 123.4^\circ$

Rule: Must be Three digits before decimal.

$12.34 \rightarrow 012.34$

$6.4 \rightarrow 006.4$

$0.5 \rightarrow 000.5$

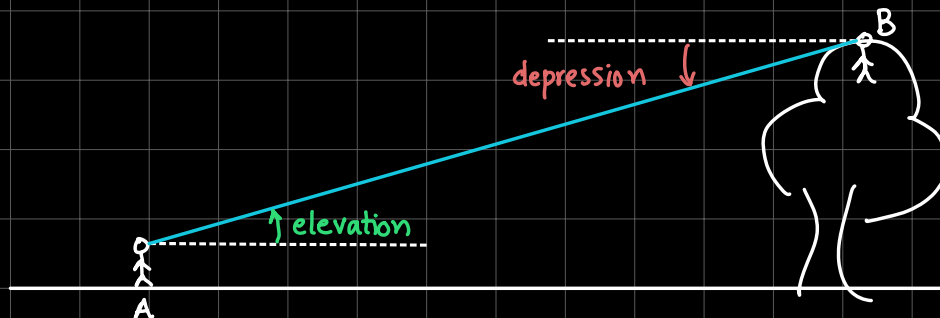
1 Bearing = 1 Mark

4 marks

1 mark
Bearing

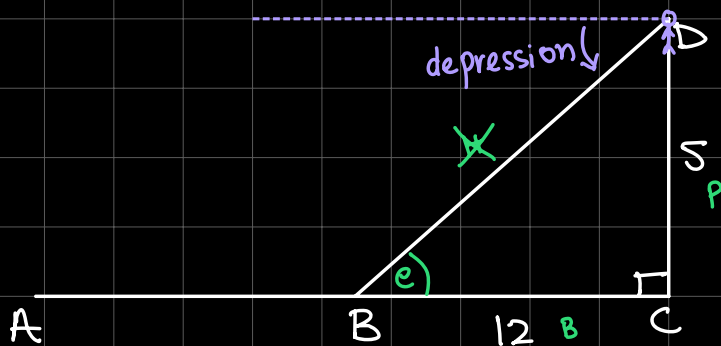
3
angle
missing.

ANGLE OF ELEVATION AND DEPRESSION



- Note:
- 1) angle of elevation = angle of Depression. (Z-angles)
 - 2) Both angle of elevation and angle of depression are made with a HORIZONTAL Line.

Q



Find angle of depression of B from D

$$\tan e = \frac{5}{12}$$

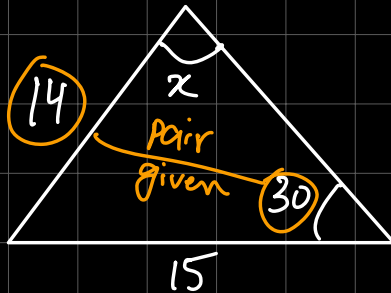
$$e = \tan^{-1}\left(\frac{5}{12}\right)$$

$$e = 22.6198$$

$$\text{angle of depression} = 22.6198$$

CALC. PAPER:

OBTUSE ANGLE VARIATION



Q. Given that x is obtuse, Find x .
↓
ignore this and find x using trig.

$$\frac{\sin 30}{14} = \frac{\sin x}{15}$$

$$14 \sin x = 15 \sin 30$$

$$\sin x = \frac{15 \sin 30}{14}$$

$$\sin x = 0.535714$$

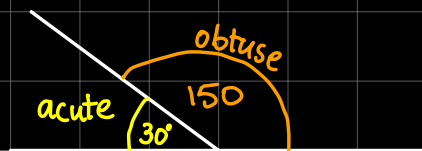
$$x = \sin^{-1}(0.535714)$$

$$x = 32.3924^\circ (\text{Acute})$$

$$\begin{aligned} \text{OBTUSE} &= 180 - \text{ACUTE} \\ &= 180 - 32.3924 \\ &= 147.6076 \end{aligned}$$

0 - 90	Acute
90	Right
90 - 180	Obtuse
180	Straight
180 - 360	Reflex

SPECIAL CONCEPT (1 MARK)
NO CALCULATOR.



explain

Book

$$\begin{aligned}\sin(180 - \theta) &= \sin \theta \\ \cos(180 - \theta) &= -\cos \theta \\ \tan(180 - \theta) &= -\tan \theta\end{aligned}$$

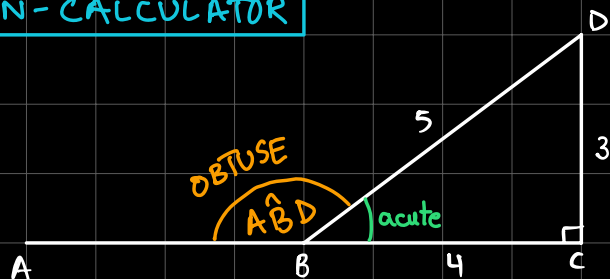
$$\sin 30 = 0.5 \quad \sin 150 = 0.5$$

$$\cos 30 = 0.866 \quad \cos 150 = -0.866$$

$$\tan 30 = 0.577 \quad \tan 150 = -0.577$$

- 1) when there are two neighboring angles on a straight line, one is acute other is obtuse.
- 2) Numerical value of sin/cos/tan of both angles is exactly same.
cos and tan of obtuse angle is negative.

NON-CALCULATOR



Find value of:

(i) $\sin C \hat{B} D = \frac{P}{H} = \frac{3}{5}$

(ii) $\cos C \hat{B} D = \frac{B}{H} = \frac{3}{5}$

(iii) $\tan C \hat{B} D = \frac{P}{B} = \frac{4}{3}$

(iv) $\cos A \hat{B} D$

$\cos(\text{acute}) = \frac{B}{H} = \frac{4}{5}$

$\cos(\text{obtuse}) = -\frac{4}{5}$

$\cos(A \hat{B} D) = -\frac{4}{5}$

(v) $\tan A \hat{B} D$

$\tan(\text{acute}) = \frac{P}{B} = \frac{3}{4}$

$\tan(\text{obtuse}) = -\frac{3}{4}$

$\tan A \hat{B} D = -\frac{3}{4}$

(vi) $\sin A \hat{B} D$

$\sin(\text{acute}) = \frac{P}{H} = \frac{3}{5}$

$\sin(\text{obtuse}) = \frac{3}{5}$

$\sin(A \hat{B} D) = \frac{3}{5}$

(IMP)

Q:

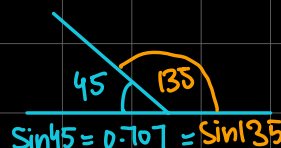
NO CALCULATOR

$\sin x = 0.707$

Given that one value of $x = 45$,
write down the other solution of this
equation for $90 < x < 180$. (1 Mark)

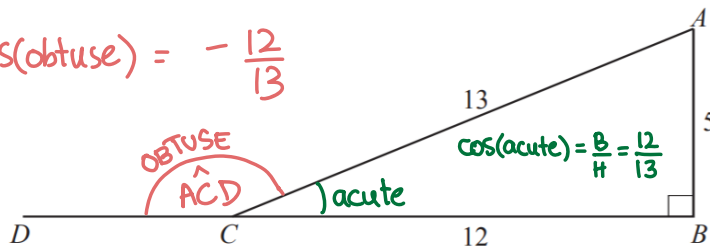
OBTUSE

$OBTUSE = 180 - 45 = 135$



(b)

$$\cos(\text{obtuse}) = -\frac{12}{13}$$



Triangle ABC is right-angled at B and BC is produced to D .

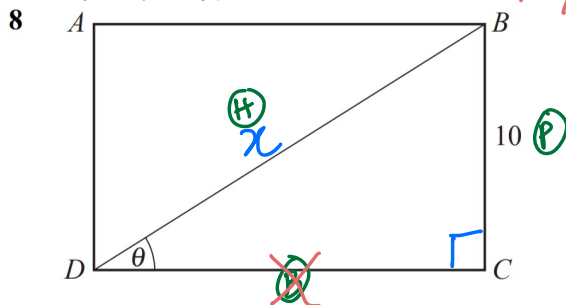
$AB = 5$ cm, $BC = 12$ cm and $AC = 13$ cm.

Write down the value of $\cos \hat{ACD}$.

Answer $\cos \hat{ACD} = -\frac{12}{13}$ [1]

(NON-CALCULATOR) TABLE OF VALUES GIVEN.
Normally in Non Calculator paper we don't use $\sin/\cos/\tan$

TIP: TREAT THIS QUESTION AS IF YOU HAVE A CALCULATOR.



$\sin \theta$	$\frac{5}{13}$
$\cos \theta$	$\frac{12}{13}$
$\tan \theta$	$\frac{5}{12}$

$ABCD$ is a rectangle with $BC = 10$ cm.

Using as much information from the table as is necessary, calculate BD .

$$\sin \theta = \frac{10}{BD}$$

$$\frac{5}{13} = \frac{10}{BD}$$

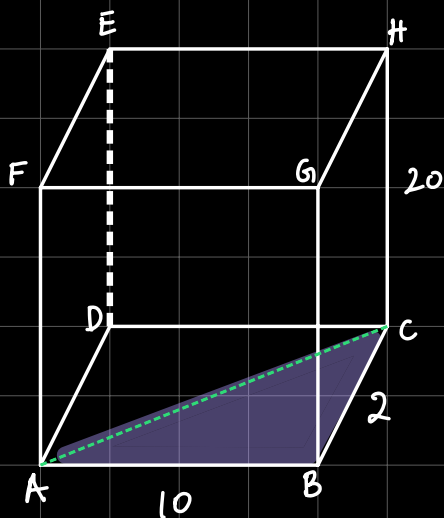
$$5 \times BD = 13 \times 10$$

$$BD = \frac{13 \times 10}{5} = 26$$

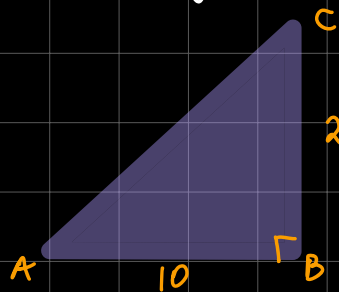
Answer $BD = 26$ cm [2]

3-D TRIGONOMETRY

EXTRACT RIGHT ANGLED TRIANGLE



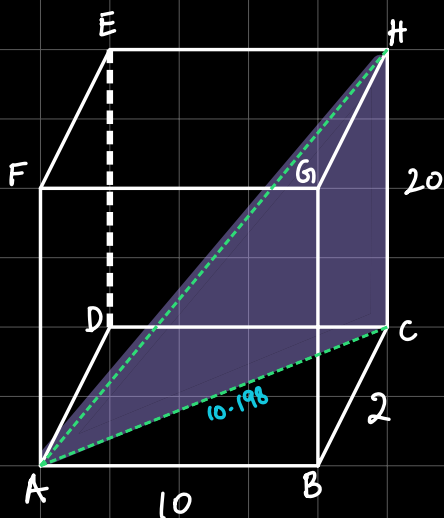
Find length AC.



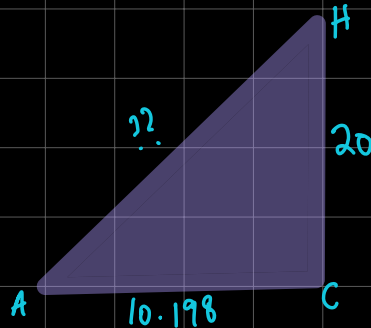
$$AC^2 = 10^2 + 2^2$$

$$AC^2 = 104$$

$$AC = \sqrt{104} = 10.198$$



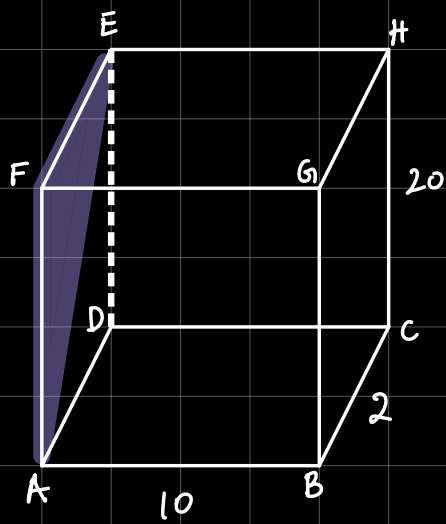
Find AH?



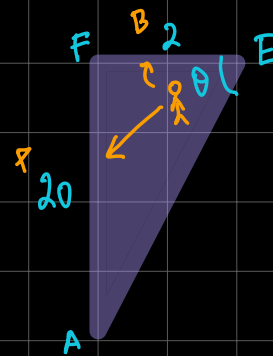
$$AH^2 = 10.198^2 + 20^2$$

$$AH^2 = 504$$

$$AH = \sqrt{504} = 22.44972$$



Find $\angle FEA$?



$$\tan \theta = \frac{20}{2}$$

$$\theta = \tan^{-1}\left(\frac{20}{2}\right)$$

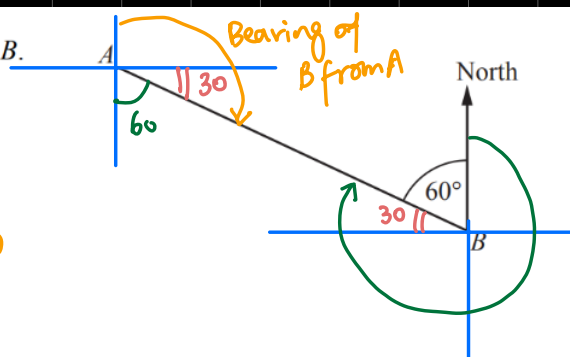
$$\theta = 84.2894$$

- 4 The diagram shows the positions of A and B .

Find the bearing of

(a) A from B , $= 90 + 90 + 90 + 30 = 300$

(b) B from A . $= 90 + 30 = 120$



Answer (a) 300 [1]

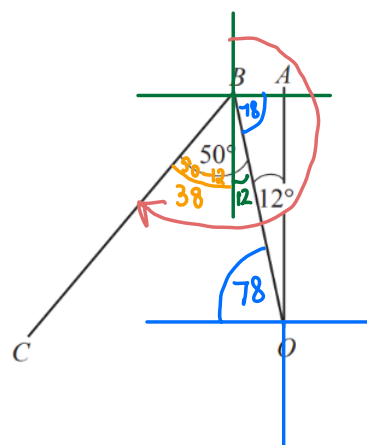
(b) 120 [1]

- 5 A is due North of O .

(a) A ship sailed from O to B , where $\angle AOB = 12^\circ$.
Write down the bearing of B from O . $= 360 - 12 = 348$

(b) At B , the ship turned and sailed to C , where $\angle OBC = 50^\circ$.
Calculate the bearing of C from B .

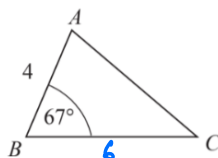
$90 + 90 + 38 = 218$



Answer (a) [1]

(b) [1]

2 (a)



In triangle ABC , $AB = 4$ m, $BC = 6$ m and $\angle ABC = 67^\circ$.

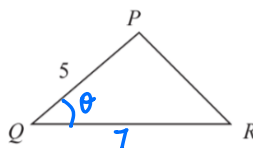
(i) Show that the area of triangle ABC is 11.05 m^2 correct to 2 decimal places.

$$A = \frac{1}{2} \boxed{4} \boxed{6} \sin \boxed{67} = 11.046$$

$$\boxed{11.05} \text{ 2dp.}$$

[1]

(ii)



In triangle PQR , $PQ = 5$ m and $QR = 7$ m.

Area of triangle PQR = Area of triangle ABC . (11.05)

Find the acute angle PQR .

$$A = \frac{1}{2} \square \square \sin \bigcirc$$

$$11.05 = \frac{1}{2} \boxed{5} \boxed{7} \sin \bigcirc$$

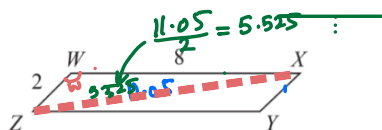
$$22.1 = 35 \sin Q$$

$$\sin Q = \frac{22.1}{35}$$

$$Q = \sin^{-1}\left(\frac{22.1}{35}\right) = 39.1556$$

Answer [2]

(iii)



In the parallelogram $WXYZ$, $WX = 8$ m and $WZ = 2$ m.

Area of parallelogram $WXYZ$ = Area of triangle ABC . (11.05)

Find the obtuse angle ZWX .

$$\textcircled{A} = \frac{1}{2} \boxed{2} \boxed{8} \sin \textcircled{W}$$

$$11.05 = 16 \sin W$$

$$\sin W = \frac{11.05}{16}$$

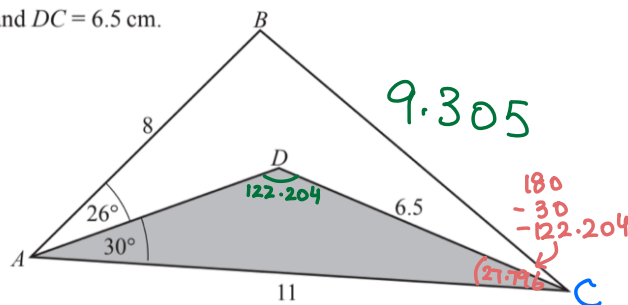
$$W = \sin^{-1}\left(\frac{11.05}{16}\right)$$

$$W = 43.6796 \text{ (Acute)}$$

$$\text{Obtuse} = 180 - 43.6796 = 136.3204$$

Answer [3]

- 3 In the diagram, $AB = 8$ cm, $AC = 11$ cm and $DC = 6.5$ cm.
 $\angle BAD = 26^\circ$ and $\angle DAC = 30^\circ$.



- (a) Calculate BC .

$$\cos 56 = \frac{8^2 + 11^2 - CB^2}{2(8)(11)}$$

$$\cos 56 = \frac{185 - CB^2}{176}$$

$$176 \cos 56 = 185 - CB^2$$

$$CB^2 = 185 - 176 \cos 56$$

$$CB^2 = 86.582048$$

$$CB = \sqrt{86.582048}$$

$$CB = 9.305$$

Answer cm [4]

- (b) Calculate the obtuse angle ADC .

$$\frac{\sin 30}{6.5} = \frac{\sin D}{11}$$

$$6.5 \sin D = 11 \sin 30$$

$$\sin D = \frac{11 \sin 30}{6.5}$$

$$\sin D = 0.84615$$

$$D = \sin^{-1}(0.84615)$$

$$D = 57.79577 (\text{Acute})$$

$$\text{Obtuse} = 180 - 57.79577$$

Answer [3]

- (c) Find the percentage of triangle ABC that has been shaded.

$$\% \text{shaded} = \frac{\text{shaded}}{\Delta ABC} \times 100 = \frac{16.6711}{36.4776} \times 100$$

$$\text{Shaded} = \frac{1}{2} [6.5][11] \sin(27.796)$$

$$\text{SHADED} = 16.6711$$

$$\Delta ABC = \frac{1}{2} [8][11] \sin(56)$$

$$\Delta ABC = 36.4776$$

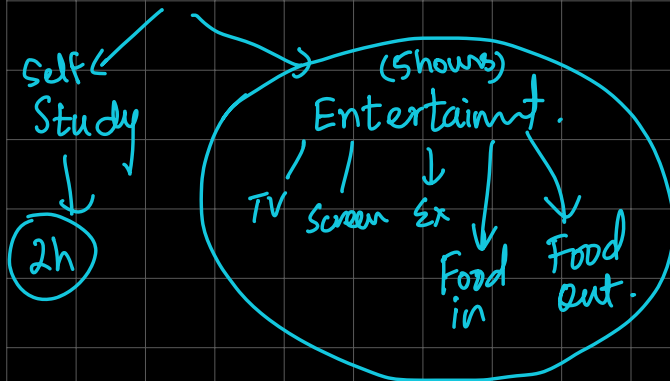
$$= 45.702\%$$

Answer % [4]

STUDY SCHEDULE

Day

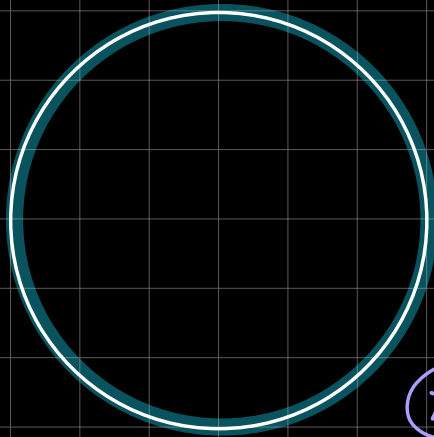
24 hours
 - 6 (School)
 18 hours
 - 3 (Academy)
 15 hours
 - 8 Sleep
 7 hours



Week

M	T	W	Th	F	S	S
Chem S1	Math S1	Phy S1	Comp S1	S1	S1	S1
S2 Urdu	S2 Bio	S2	S2	S2	S2	S2
					S3	S3

CIRCLE



$$\text{Area} = \pi r^2$$

$$\rightarrow \text{Circumference} = \text{Perimeter} = 2\pi r$$

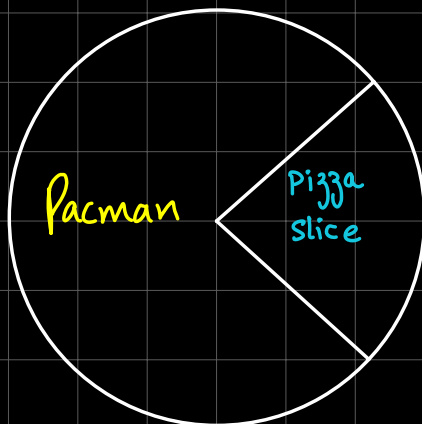
$$\pi \Rightarrow ? \quad \frac{22}{7}, 3.142 \quad ??$$

Use Calculator value.

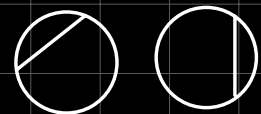
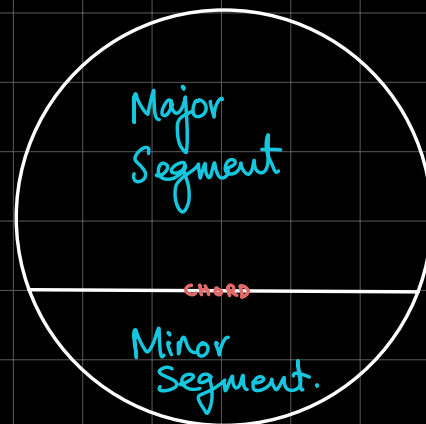
↓ SHIFT

Middle button in
Lowest row

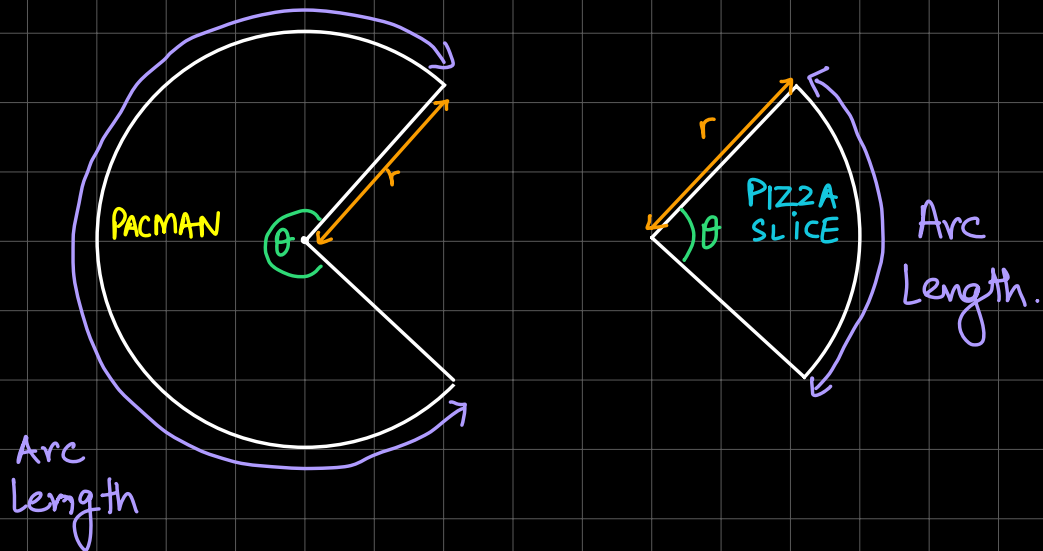
SECTOR



SEGMENTS



SECTOR



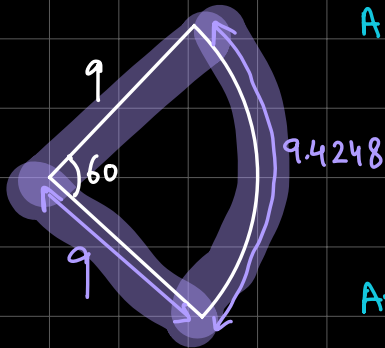
Pacman and Pizza Slice are good friends.
They share the same two formulas.

$$\text{Arc length of sector} = \frac{\theta}{360} \times 2\pi r$$

$$\text{Area of sector} = \frac{\theta}{360} \times \pi r^2$$

Q: a) Find area of sector.

$$A = \frac{\theta}{360} \times \pi r^2 = \frac{60}{360} \times \pi (9)^2 = 42.4115$$



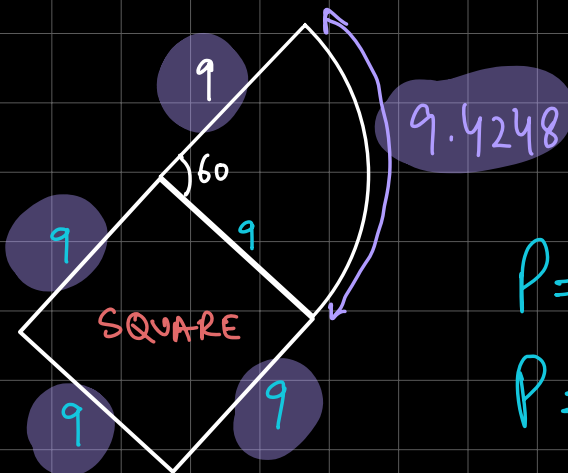
b) Find arc length of sector

$$\text{Arc} = \frac{\theta}{360} \times 2\pi r = \frac{60}{360} \times 2\pi (9) = 9.4248$$

c) Find perimeter of sector.

$$P = 9 + 9 + 9.4248$$

$$P = 27.4248$$



$$P = 9.4248 + 9 + 9 + 9 + 9$$

$$P = \underline{\hspace{2cm}}$$

